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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/746,822	12/22/2000	Mohammed N. Islam	068069.0110	8908

7590 06/02/2004  
Douglas M. Kubehl  
Baker Botts L.L.P.  
2001 Ross Avenue  
Dallas, TX 75201-2980

EXAMINER

PHAN, HANH

ART UNIT	PAPER NUMBER
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2633

8

DATE MAILED: 06/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/746,822

Applicant(s)

ISLAM ET AL.

Examiner

Hanh Phan

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13,25-33,39,41 and 42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13,25-33,39,41 and 42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4</u> . | 6) <input type="checkbox"/> Other: _____  |

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### DETAILED ACTION

1. Applicant's election without traverse of Species A (Figure 16B) directed to claims 1-13, 25-33, 39 and 41-42 in Paper No. 7 is acknowledged.

#### ***Double Patenting***

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-13, 25-33, 39 and 41-42 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-42 of U.S. Patent No. 6,493,488 (Islam et al) in view of Kiang et al (US Patent No. 6,449,407).

Regarding claims 1, 25, 26, 27, 39, 41 and 42, U.S. Patent No. 6,493,488 (Islam et al) discloses an signal processing device comprising:

an input operable to receive an input optical signal and to generate a first and a second copy of the input signal;

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a plurality of at least substantially reflective surfaces, each operable to receive either the first signal copy or the second signal copy and to reflect the copies for ultimate combination at an output to form an output signal for transmission, at least one of the at least substantially reflective surfaces comprising a moveable mirror operable to change its position relative to the input to create a phase shift between the first and second signal copies so that either the input optical signal or the added optical signal is communicated as the output signal depending on the position of the at least one moveable mirror (see claim 1 of US Patent No. 6,493,488).

Islam differs from claims 1, 25, 26, 27, 39, 41 and 42 in that he fails to teach an added optical signal. However, Kiang in US Patent No. 6,449,407 teaches a wavelength division add/drop multiplexer comprises an added optical signal (Figs. 3A, 3B, 4 and 5, see from col. 3, line 50 to col. 7, lines 15). Therefore, it would have been obvious to one having skill in the art at the time the invention was to incorporate the added optical signal as taught by Tomlinson in the system of Islam. One of ordinary skill in the art would have been motivated to do this Tomlinson suggests from col. 3, line 50 to col. 7, lines 15 that using such an added optical signal has advantage of allowing providing adding/dropping of one or more wavelength channels at a node in the optical communication network.

Regarding claims 2 and 28, Islam further teaches wherein at least one of the at least substantially reflective surfaces comprises a micro-electro-optic system (MEMS) device operable to undergo a substantially piston-like motion to change its position relative to the input (see claim 1 of Islam).

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Regarding claims 3 and 29, Islam further teaches wherein the MEMS device comprises: an inner conductive layer disposed inwardly from the moveable mirror layer and forming a space between the moveable mirror layer and the inner conductive layer; wherein the moveable mirror layer comprises an at least substantially conductive layer operable to move relative to the inner conductive layer in response to a voltage difference between the moveable mirror layer and the inner conductive layer (see claim 4 of Islam).

Regarding claim 4, Islam further teaches wherein the inner conductive layer comprises a doped semiconductor substrate (see claim 7 of Islam).

Regarding claim 5, Islam further teaches wherein the inner conductive layer comprises a layer of at least substantially conductive material formed outwardly from a semiconductor substrate (see claim 8 of Islam).

Regarding claims 6 and 30, Islam further teaches wherein the moveable mirror layer comprises a plurality of adjacent mirror strips, at least some of the plurality of adjacent mirror strips separated by air gaps operable to relieve air damping when the mirror strips move relative to the inner conductive layer (see claim 9 of Islam).

Regarding claims 7 and 31, Islam further teaches wherein all of the moveable mirror strips move at least substantially in unison in response to the voltage difference (see claim 10 of Islam).

Regarding claims 8, 32 and 33, Islam further teaches wherein either the inner conductive layer or each of the moveable mirror strips is coupled to a ground, and wherein the other is operable to receive a control voltage signal (see claim 11 of Islam).

Regarding claim 9, Islam further teaches wherein a grazing angle between the moveable mirror layer and the signal copy reflected by the moveable mirror layer comprises an angle that is less than forty-five degrees (see claim 14 of Islam).

Regarding claim 10, Islam further teaches a second MEMS device disposed between the first MEMS device and the output, the second MEMS device comprising a moveable mirror layer operable to receive a phase shifted signal copy from the first MEMS device and to change its position relative to the first MEMS device to introduce a further phase shift to the signal copy (see claim 15 of Islam).

Regarding claim 11, Islam further teaches wherein the input comprises a first beam splitter and wherein the output comprises a second beam splitter (see claims 18 and 19 of Islam).

Regarding claim 12, Islam further teaches wherein the input and the output comprise a single beam splitting device (see claims 18 and 19 of Islam).

Regarding claim 13, Islam further teaches at least one additional reflective surface between the beam splitter and the first MEMS device, the at least one additional reflective surface operable to receive a signal copy from the first beam splitter and to reflect the signal copy for ultimate reception by the first mirror (see claim 17 of Islam).

#### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 27, 28, 41 and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Tomlinson (US Patent No. 5,960,133).

Regarding claims 1, 27, 41 and 42, referring to Figure 5, Tomlinson discloses an signal processing device comprising:

an input (i.e., diffraction grating 24, Fig. 5) operable to receive an input optical signal (i.e., input optical signal 50, Fig. 5) and an added optical signal (i.e., added optical signal 54, Fig. 5) and to generate a first and a second copy of the input signal and a first and a second copy of the added signal;

a plurality of at least substantially reflective surfaces (i.e., micro-mirrors 28-1 and 28-2, Fig. 5), each operable to receive either the first signal copy or the second signal copy and to reflect the copies for ultimate combination at an output to form an output signal for transmission, at least one of the at least substantially reflective surfaces comprising a moveable mirror operable to change its position relative to the input to create a phase shift between the first and second signal copies so that either the input optical signal or the added optical signal is communicated as the output signal depending on the position of the at least one moveable mirror (col. 4, lines 25-52, col. 5, lines 30-67 and col. 6, lines 1-65).

Regarding claims 2 and 28, Tomlinson further teaches wherein at least one of the at least substantially reflective surfaces comprises a micro-electro-optic system (MEMS) device operable to undergo a substantially piston-like motion to change its position relative to the input (col. 5, lines 6-67 and col. 6, lines 1-65).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 25, 26 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomlinson (US Patent No. 5,960,133) in view of Kiang et al (US Patent No. 6,49,407).

Regarding claims 25, 26 and 39, Tomlinson differs from claims 25, 26 and 39 in that he fails to teach a wavelength division demultiplexer and a wavelength division multiplexer. However, Kiang in US Patent No. 6,449,407 teaches a wavelength division add/drop multiplexer comprises a wavelength division demultiplexer (402) and a wavelength division multiplexer (404)(see Fig. 4, col. 5, lines 14-67 and col. 5, lines 1-58). Therefore, it would have been obvious to one having skill in the art at the time the invention was to incorporate the wavelength division demultiplexer and wavelength division multiplexer as taught by Kiang in the system of Tomlinson. One of ordinary skill in the art would have been motivated to do this Kiang suggests in col. 5, lines 14-67 and col. 5, lines 1-58 that using such the wavelength division demultiplexer and wavelength division multiplexer have advantage of allowing separate the multiplexed signal into the individual signals and combining the individual signals into the multiplexed signal.



8. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomlinson (US Patent No. 5,960,133).

Regarding claims 11-13, it would have been obvious to obtain a first beam splitter and a second beam splitter in order to split the signals into the component signals and to distribute the signals to the user terminals in the optical communication network.

***Allowable Subject Matter***

9. Claims 3-10 and 29-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hill (US Patent No. 6,542,656) discloses add/drop optical switch.

Gloeckner et al (US Patent No. 6,445,841) discloses optical add/drop switch.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (703)306-5840.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (703)305-4729. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

A handwritten signature in cursive script, appearing to read 'Hanh Phan', is written over a horizontal line.

Hanh Phan

05/25/2004